

DETAILED ACTION

Allowable Subject Matter

Claims 19-34 are allowed.

The closest prior art references are Hamalainen et al (US 5,627,243), Rhee et al (US 4,933,191), Veariel et al (US 6,838,532 B2), Yamamoto et al (US 5,753,191), and Grott et al (US 5,837,208).

The following is an examiner's statement of reasons for allowance:

Regarding claim 19, Hamalainen et al discloses a method of producing polymers in a gas phase polymerization reactor, the reactor having an elongated reactor body, defined by reactor walls, and an essentially vertically disposed central axis, the reactor comprising an upper part, in which a reactor bed of fluidized catalyst particles can be formed, and a lower part, in which monomer gas can be introduced, said upper and said lower parts being separated by a distribution plate having an annular opening along the reactor walls which promotes distribution into the fluidized bed of monomers flowing from the lower part into the upper part, wherein said method comprises:

- feeding a gas stream containing one or more monomers into the lower part of the reactor;
- polymerizing the monomers on the catalyst particles to form a polymer;
- wherein the gas stream is fed into the lower part of the reactor along the periphery of the inside of the reactor walls past the abutting distribution plate to

prevent the formation of stagnant zones in the fluidized bed at the reactor walls in the vicinity of the distribution plate, and

- a single distribution plate is used in the reactor body (see column 5, line 49 through column 6, line 10), wherein at least 30% of the total flow of gas through the distribution plate is conducted along the periphery of the inside of the reactor walls, since the size and number of perforation holes is selected so that only a minor portion of the circulating gas flow passes through the flow control element while the rest flow is directed sideways (see column 3, lines 4-26).

Rhee et al discloses:

- withdrawing unreacted monomers; and
- recovering the polymer (see column 7, lines 39-65).

The prior art references do not disclose or suggest the annular opening being formed between the periphery of the distribution plate edge and the reactor wall to allow at least 30% of the total flow of the gas stream to flow along the inside wall past the distribution plate.

Claims 20-30 depend on claim 19.

Regarding claim 31, Hamalainen et al discloses an apparatus for producing polymers by gas phase polymerization, comprising: an elongated reactor body, defined by reactor walls, said reactor body having an essentially vertically disposed central axis (see column 2, line 44 through column 3, line 3), said reactor body comprising: an upper part (12), in which a reactor bed of fluidized catalyst particles can be formed, and a lower part (13), in which monomer gas can be introduced, said upper and said lower

parts being separated by a distribution plate (15) which promotes distribution into the fluidized bed of monomers flowing from the lower part into the upper part; at least one feed nozzle (14) in the lower part of the reactor for introducing a gas stream containing monomers into the lower part of the reactor; a discharge device in the upper part of the reactor for recovering polymer product from the reactor, wherein the distribution plate is fitted to allow for the flow of at least 30% of the total flow of gas stream fed into the lower part of the reactor along the inside of the reactor walls past the distribution plate, and wherein a single distribution plate is fitted inside the reactor body (see figure 1; column 4, lines 39-50; and column 5, line 49 through column 6, line 10), since the size and number of perforation holes is selected so that only a minor portion of the circulating gas flow passes through the flow control element while the rest flow is directed sideways (see column 3, lines 4-26); and wherein the openings of the distribution plate have a circular cross-section transversally to the central axis of the reactor (see Abstract).

Veariel et al discloses a discharge outlet nozzle (see claims 11, 18 and 25).

Yamamoto et al discloses a distribution plate having a number of gas passage holes (20) where the holes (20) perforated in the outer peripheral portion have an average diameter which is larger than the average diameter of the holes (2) perforated in the inner peripheral portion to provide uniform gas flow (see column 6, lines 1-53).

Grott et al discloses an annular gap (17) between the first distribution tray (21) and the vessel wall (1) where the vapor flows (see Abstract and figure 1).

It would not have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of the prior art references because express motivation to combine the references is lacking.

Claims 32-34 depend on claim 31.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Y./

Examiner, Art Unit 1797

/Walter D. Griffin/

Supervisory Patent Examiner, Art Unit 1797